

## 9. Assessment of the Pacific ocean perch stock in the Gulf of Alaska (Executive Summary)

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### Introduction

Gulf of Alaska (GOA) rockfish are assessed on a biennial stock assessment schedule to coincide with new survey data. We use a separable age-structured model as the primary assessment tool for GOA Pacific ocean perch. This consists of an assessment model, which uses survey and fishery data to generate a historical time series of population estimates and a projection model, which uses results from the assessment model to predict future population estimates and recommended harvest levels. For Gulf of Alaska rockfish in alternate (even) years, we present an executive summary to recommend harvest levels for the next (odd) year. For this off-cycle year, we only updated the 2009 projection model estimates with revised catch data for 2009 and a new catch estimate for 2010. For further information regarding the assessment model, please refer to last year's full stock assessment, which is available online (Hanselman et al. 2009, <http://www.afsc.noaa.gov/refm/docs/2009/GOApop.pdf>). A full stock assessment document with updated results for the assessment and projection model will be presented in next year's SAFE report.

### Updated ABC, OFL, Catch and Projection

New information for this year's projection is updated 2009 catch at 12,985 t and the October 2<sup>nd</sup> estimate of the 2010 catch at 14,522 t. Catch estimates used in last year's model were 12,736 t and 14,770 t for 2009 and 2010, respectively. For the 2011 fishery, we recommend the maximum allowable ABC of 16,997 t from the updated projection. This ABC is very similar to last year's ABC of 17,584 t. The corresponding reference values for Pacific ocean perch are summarized in the following table, with the recommended ABC and OFL values in bold.

Quantity/Status	Last Year (2009)		This Year	
	2010	2011	2011	2012*
<i>M</i> (natural mortality)	0.061	0.061	0.061	0.061
Specified/recommended Tier	3a	3a	3a	3a
Projected biomass (ages 2+)	334,797	330,277	330,480	326,324
Female spawning biomass (t)				
Projected	107,763	108,192	108,212	107,185
<i>B</i> <sub>100%</sub>	227,610	227,610	227,610	227,610
<i>B</i> <sub>40%</sub>	91,044	91,044	91,044	91,044
<i>B</i> <sub>35%</sub>	79,664	79,664	79,664	79,664
<i>F</i> <sub>OFL</sub>	0.142	0.142	0.142	0.142
<i>maxF</i> <sub>ABC</sub> (maximum allowable = <i>F</i> <sub>40%</sub> )	0.123	0.123	0.123	0.123
Specified/recommended <i>F</i> <sub>ABC</sub>	0.123	0.123	0.123	0.123
Specified/recommended OFL (t)	20,243	19,560	<b>19,566</b>	18,635
Specified/recommended ABC (t)	17,584	16,993	<b>16,997</b>	16,187
Is the stock being subjected to overfishing?	No	No	No	No
Is the stock currently overfished?	No	No	No	No
Is the stock approaching a condition of being overfished?	No	No	No	No

\*Projected ABCs and OFLs for 2012 are derived using an expected catch value of 14,318 t for 2011 based on recent ratios of catch to ABC. This calculation is in response to management requests to obtain a more accurate one-year projection.

## Area Apportionment

The apportionment percentages are identical to last year, because there is no new survey information. The following table shows the recommended apportionment for 2011. Please refer to last year's SAFE report for information regarding the apportionment rationale for Pacific ocean perch.

	Western	Central	Eastern	Total
Area Apportionment	16%	61%	23%	100%
Area ABC (t)	<b>2,798</b>	<b>10,379</b>	<b>3,820</b>	<b>16,997</b>
Area OFL (t)	3,221	11,948	4,397	<b>19,566</b>

Amendment 41 prohibited trawling in the Eastern area east of 140° W longitude. The ratio of biomass still obtainable in the W. Yakutat area (between 147° W and 140° W) is the same as last year at 0.50. This results in the following apportionment of the Eastern Gulf area:

	W. Yakutat	E. Yakutat/Southeast
Area ABC (t)	1,937	1,883

## Responses to Council, SSC, and Plan Team Comments

*The GOA Plan Team 2009 minutes included the following comments concerning all stock assessments:*

*“That the AFSC coordinate with the Regional Office a source for catch data to ensure that authors use the same set of reports for recent years (e.g., for the current and previous year). This also applies for prohibited species catch (PSC) tables as well as non-target species catch.”*

A coordinated effort between Fisheries Monitoring and Assessment (FMA) division, the Alaska Regional Office (AKRO) and the Pacific States Marine Fisheries Commission (PSMFC) was initiated in 2009 to utilize the Alaska Fisheries Information Network (AKFIN) as a data warehouse for Alaska Fisheries Science Center (AFSC) economists and stock assessment scientists. A workshop was held in February 2010 at the Auke Bay Laboratories (ABL) where FMA, AKRO, AKFIN, and ABL staff discussed the types of fishery data required each year for the stock assessments and SAFE reports. Included in this workshop was an introduction to the new AKFIN Answers Dashboard site and newly added North Pacific Observer (NORPAC) database tables. The AKFIN site is a coordinated effort between AKRO, FMA, and AKFIN to house and distribute fishery data. The new NORPAC tables maintain continuity of observer data across the entire historical time series. Following this workshop a reports committee consisting of AFSC and AKFIN staff was developed to produce standardized catch reports available through the AKFIN Answers site. These reports are in the testing phase and will be available for assessments in 2011.

*“For fisheries where bycatch in halibut fisheries apply, authors are requested to coordinate with the Regional Office or other appropriate agency to account for these removals.”*

The issues of unobserved incidental catch in the IFQ halibut fishery is of increasing concern in the management of many GOA species, and the SSC has specifically requested catch estimates for rougheye rockfish, sharks and skates. A working group was formed in 2010 to examine quantitative methods to estimate the incidental catch of non-target species. The working group presented multiple approaches to the Joint Groundfish Plan Team at the September 2010 meeting and will present catch estimates of four example species for review at the November 2010 Plan Team meeting. After the SSC reviews the methods and determines the most appropriate, the working group will prepare time series estimates of catch for all non-target species. This data will be available to assessment authors for the 2011 stock

assessment cycle. However, it is unlikely the unobserved incidental catch in the IFQ halibut fishery of Pacific ocean perch is significant.

***The SSC December 2009 minutes included the following comments concerning all stock assessments:***

*“The SSC suggests that description of the apportionment rationale in each SAFE chapter of area-apportioned species would be helpful to the reader.”*

The apportionment rationale for Pacific ocean perch is explained in the *Area Apportionment of Harvests* section of the 2009 full SAFE report under *Projections and Harvest Alternatives*. Apportionment is determined based on the geographic distribution of Pacific ocean perch biomass in the trawl surveys. This distribution has been computed as a weighted average of the percent biomass distribution for each area in the three most recent trawl surveys. Each successive survey is given a progressively heavier weighting using factors of 4, 6, and 9, respectively.

The GOA Plan Team 2009 minutes included the following comments concerning all rockfish:

*“Some rockfish assessments may have revised maturity estimates and the Team would like to review comparisons of these studies in September 2010. In particular, locations and timing of samples, and recommendations from assessment authors for approaches to modifying assessments.”*

A report on estimating rockfish maturity in the Gulf of Alaska was prepared and presented by ABL rockfish staff for the September 2010 Plan Team meeting. The GOA rockfish assessment authors will investigate methods for incorporating new maturity information into the assessment for 2011. Allowing for uncertainty of maturity estimates within the assessment is a possibility, but further exploration of such methods is needed.

***The GOA Plan Team 2009 minutes included the following comments concerning Pacific ocean perch:***

*“Show comparisons of ages by depth and vessel types”*

This will be presented in the 2011 full assessment for GOA POP.

*“Modify figure 9-23 so clear that control changes rates at 40% (not 35% as appears).”*

This will be corrected in the 2011 full assessment for GOA POP.

*“Include fishery age composition by depth.”*

This will be presented in the 2011 full assessment for GOA POP along with analysis from recommendation one above.

*“Evaluate potential to estimate catch uncertainty (future assessments) in management uncertainty.”*

The authors are unsure in what context this recommendation was formed. This is likely related to incorporating management uncertainty into Annual Catch Targets (ACTs) or perhaps scientific uncertainty into Annual Catch Limits (ACLs). In either case, this would be something that requires a broader analysis for all groundfish species in the future, in which GOA POP would be included.

## Research Priorities

It is critically important to rockfish stock assessments that the GOA trawl surveys continue and that they extend into deeper waters (>300m) in order to cover the range of primary habitat for rockfish. There is little information on larval, post-larval, or early juvenile stages of rockfish. Habitat requirements for these stages are mostly unknown. Research on early life history parameters and essential habitat for these early life stages is vital to effective management of rockfish.

## Summaries for Plan Team

Species	Year	Biomass <sup>1</sup>	OFL	ABC	TAC	Catch
Pacific ocean perch	2009	318,336	17,940	15,111	15,111	12,985
	2010	334,797	20,243	17,584	17,584	14,522
	2011	330,480	19,566	16,997		
	2012	326,324	18,635	16,187		

<sup>1</sup>Total 2+ biomass from the age-structured model

Stock/ Assemblage	Area	2010				2011		2012	
		OFL	ABC	TAC	Catch <sup>2</sup>	OFL	ABC	OFL	ABC
Pacific ocean perch	W	3,332	2,895	2,895	3,138	3,221	2,798	3,068	2,665
	C	12,361	10,737	10,737	9,456	11,948	10,379	11,379	9,884
	WYAK		2,004	2,004	1,928		1,937		1,845
	SEO		1,948	1,948	-		1,883		1,793
	E	4,550	3,952	3,952	1,928	4,397	3,820	4,188	3,638
	Total		20,243	17,584	17,584	14,522	19,566	16,997	18,635

<sup>2</sup>Current as of October 2, 2010 (<http://www.fakr.noaa.gov/2010/2010.htm>)